



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/682,404	08/30/2001	Kung-Cho Sheng	PMXP0106USA	5715
27765	7590	08/12/2004	EXAMINER	
NAIPO (NORTH AMERICA INTERNATIONAL PATENT OFFICE) P.O. BOX 506 MERRIFIELD, VA 22116			SIANGCHIN, KEVIN	
			ART UNIT	PAPER NUMBER
			2623	

DATE MAILED: 08/12/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/682,404

Applicant(s)

SHENG ET AL.

Examiner

Kevin Siangchin

Art Unit

2623

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

Detailed Action

Claims

Rejections Under 35 U.S.C. § 112(2)

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 8 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

3. *The following is in regard to Claim 8.* According to claim 8, "the serial bus cable comprises two power lines and two data lines". This is consistent with Applicant's specification (e.g. Applicant's Fig. 4), as well as the USB standard (see USB Specification Revision 1.1, Section 4.2.1). Correspondingly, notice in Fig. 1 that each device has two power lines and two data lines. However, claim 8 goes on to claim, "two relays for switching the two power lines and the two data lines". This is neither consistent with the Applicant's specification (e.g. Applicant's Fig. 1) nor the USB standard. The data lines and power lines of the serial bus are not, nor should they be, switched. Rather, the relays 41 and 43, as depicted in Applicant's Fig. 1, switch between the two sets of data lines and power lines of the respective devices. That is, the two relays switch a total of four data lines and a total of four power lines.

4. Claim 8 will be interpreted, henceforth in this document, as follows:

The device of claim 1, wherein the serial bus cable comprises two power lines and two data lines, while the electromagnetic mechanical switch comprises two relays: one relay for switching between the pair of corresponding data lines emanating from each of the attached units (i.e. the image capture unit and the memory card reading unit), and the other relay for switching between the corresponding set of power lines emanating from each of the attached units.

Rejections Under 35 U.S.C. § 103(a)

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-2, 4-5, 7, and 9-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over the Applicant's admitted prior art, as discussed in the section of the Applicant's Specification entitled *Description of the Prior Art* and depicted in Applicant's Fig. 1, in view of Holmdahl (U.S. Patent 5,675,813). For the sake of brevity, the Applicant's admitted prior art will be referred to simply as Prior Art.

7. *The following is in regard to Claim 1.* As admitted by the Applicant, Prior Art shows an image processing device electrically connected to a computer with a serial bus cable (Prior Art Fig. 1), the device comprising:

- (1.a.) A housing. See Prior Art Fig. 1.
- (1.b.) An image capturing unit (e.g. reference number 22 of Prior Art Fig. 1) installed inside the housing for generating digital image data from a picture. See Prior Art Fig. 1.
- (1.c.) A memory card reading unit (e.g. reference number 26 of Prior Art Fig. 1) installed inside the housing for reading digital data stored in a memory card (e.g. reference number 27 of Prior Art Fig. 1).

(1.d'.) A *hub* for establishing an electrical connection between the serial bus cable and the image capturing unit or the memory card reading unit, wherein:

(1.d'.1) When *hub* switches the connection over to the image capturing unit, the image capturing unit is capable of transmitting digital image data to and receive data from the computer.

(1.d'.2) When the *hub* switches the connection over to the memory card reading unit, the memory card reading unit is capable of transmitting digital data to and receive data from the computer.

Note that operation of hubs – USB hubs or serial hubs, for example – is well-known. Hubs allow multiple devices to share (i.e. transmit data to and receive data from) a single physical connection to a host device. The operations in (1.d'.1)-(1.d'.2'), therefore, follow inherently from the operation of hubs and the nature of the attached devices (i.e. the image capturing unit and the card reading unit).

Lastly, note that so-called *bus-powered hubs*¹ are well known. In such configurations, power is supplied to the hubs via the upstream connection (e.g. the serial bus). Prior Art, however, does not explicitly show or suggest using an *electromagnetic mechanical switch*, as opposed to a hub, for establishing the connection in (1.d'.) and performing the switching in (1.d'.1)- (1.d'.2).

8. Holmdahl discloses a bus-powered hub having a switch to controlling the activation of attached peripheral devices (Holmdahl Figs. 3A and 4A-4B and column 1, lines 65-67 to column

¹ See, for example, section 4.2.1.1 of the Universal Serial Bus Specification (revision 1.1).

Art Unit: 2623

2, lines 1-11). Holmdahl further suggests that the switch can be a relay (Holmdahl Fig. 3D and column 2, lines 13-14 and column 7, lines 57-58). Relays are a well-known type of electromagnetic mechanical switches (hereinafter, EMS).

9. The teachings of Prior Art and Holmdahl are combinable because they are analogous art. In particular, both teachings are related to the switching of peripheral devices attached to a host device by a serial bus. Therefore, it would have been obvious to one of ordinary skill in the art, at the time of the applicant's claimed invention, to substitute the hub of Prior Art's image processing device with at least one relay as the means for switching between the various attached units or devices. It would be well within the capabilities of one of ordinary skill in the art to configure the relays so that they switch devices according to (1.d'.1)-(1.d'.2). The motivation for using a relay, in lieu of a hub, would have been to make the switching means less susceptible to failures due to high current or voltage fluctuations (e.g. spikes), since relays are known to be more tolerant of large currents and voltages than the solid state components that are typically used in modern hubs. An image processing device thus derived would sufficiently conform to that of claim 1.

10. *The following is in regard to Claim 2.* As shown above, the teachings of Prior Art and Holmdahl, when combined in the manner discussed above, adequately address the limitations of claim 1. The device, obtained according to the teachings of Prior Art and Holmdahl, exhibits the following characteristics, all of which result from the nature of relays, the disclosure of Holmdahl (e.g. Holmdahl Figs. 3A, 3D, and 4A-4B) and the fact that the bus is not utilized by both attached units simultaneously:

(2.a.) When the EMS switches the connection over to the image capturing unit, the serial bus cable is electrically disconnected

(i.e. the corresponding contacts depicted in Holmdahl Figs. 3A, 3D, and 4A-4B are open) from the memory card reading unit.

(2.b.) When the EMS switches the connection over to the memory card reading unit, the serial bus cable is electrically disconnected (i.e. the corresponding contacts depicted in Holmdahl Figs. 3A, 3D, and 4A-4B are open) from the image capturing unit.

Therefore, the device obtained by combining the teachings of Prior Art and Holmdahl conforms sufficiently to that which is set forth in claim 2.

11. *The following is in regard to Claim 4.* As shown above, the teachings of Prior Art and Holmdahl, when combined in the manner discussed above, adequately address the limitations of claim 1. According to Holmdahl (Holmdahl column 7, lines 57-58), the switch (e.g. switch 70 of Holmdahl Figs. 3A and 4A-4B) used to switch among the various attached devices can take on a variety of forms. It would have been obvious to one of ordinary skill in the art, at the time of the applicant's claimed invention, to use any of a multitude of available switches, including a manually operated EMS. A manually operated EMS, as opposed to a electronically actuated EMS, is advantageous because it allows the user absolute control over the switching of attached devices, without the intervention of additional software and hardware. In addition, unlike an electrically actuated EMS, a manually operated EMS would not require a constant supply of power. In this way, a manually operated EMS advantageously reduces hardware and/or software complexity, as well as power consumption. Using a manually operated EMS, as opposed to an electrically actuated EMS, results in an image processing device that sufficiently conforms to claim 4.

12. *The following is in regard to Claim 5.* As shown above, the teachings of Prior Art and Holmdahl, when combined in the manner discussed above, adequately address the limitations of claim 1. It was well-known that memory card reading units, such as reference number 26 depicted in Prior Art Fig. 1, typically transfer data to and from the memory card – that is, in addition to reading data from the memory card, they typically store data thereon. Therefore, a device obtained by combining the teachings of Prior Art and Holmdahl, in the manner discussed above, would satisfy the limitations set forth in claim 5.

13. *The following is in regard to Claim 7.* As shown above, the teachings of Prior Art and Holmdahl, when combined in the manner discussed above, adequately address the limitations of claim 1. USB and IEEE 1394 are both serial bus standards. Therefore, it would have been obvious to one of ordinary skill in the art, at the time of the applicant's claimed invention, to use either as the serial bus technology used in the device obtained according to the combined teachings of Prior Art and Holmdahl. A device obtained in this manner such would satisfy the limitations of claim 7.

14. *The following is in regard to Claim 9.* As shown above, the teachings of Prior Art and Holmdahl, when combined in the manner discussed above, adequately address the limitations of claim 1. Scanners are typical image capturing units. Therefore, it would have been obvious to one of ordinary skill in the art, at the time of the applicant's claimed invention, to use a scanner as the image capturing unit in the device obtained according to the combined teachings of Prior Art and Holmdahl. A device obtained in this manner would satisfy the limitations of claim 9.

15. *The following is in regard to Claim 10.* As shown above, the teachings of Prior Art and Holmdahl, when combined in the manner discussed above, adequately address the limitations of claim 1. Holmdahl suggests that a printer (e.g. printer 14 of Holmdahl Fig. 1) can be attached to a serial bus and switched according to the method described above. See Holmdahl column 3,

lines 28-37. It should be clear, particularly given the teachings of Holmdahl (e.g. Holmdahl Fig. 3A), that the configuration depicted in Prior Art Fig. 1 can be extended to support several devices. If a printer were to be attached, as suggested by Holmdahl, the switching (via the EMS) of the "electrical connection over to the printer so that the printer electrically connects to the computer via the serial bus cable" would proceed in a manner analogous to the switching of the image capturing device and memory card reader discussed above. The advantages of supporting multiple devices and printers, in particular, should be apparent.

16. Claims 3 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over the Prior Art, in view of Holmdahl, in further view of Tomoson (U.S. Patent Application Publication 2002/0010816).

17. *The following is in regard to Claim 3.* As shown above, the teachings of Prior Art and Holmdahl, when combined in the manner discussed above, adequately address the limitations of claim 1. While the teachings of Prior Art and Holmdahl were shown above to collectively demonstrate the switching of the EMS over to the image capturing unit and the switching of the EMS over to the memory card reading unit, neither Prior Art nor Holmdahl expressly show or suggest that the switching be dictated by a user through a driver program, resident on the computer, for controlling the image processing device (referred to, henceforth, as a device driver).

18. Tomoson disclose a computer peripheral switching device for switching between various peripheral devices attached to a computer via a serial bus (Tomoson paragraphs [0007] and paragraph [0021] (sentence 3) and Figs. 1-4). The switching device of Tomoson allows the user to select the desired peripheral (Tomoson paragraph [0011] and [0022]). A device driver,

Art Unit: 2623

resident on the host computer, conveys the user's requests to the switching circuitry (Tomoson paragraph [0026], sentence 1 and lines 13-16), thereby delegating the peripherals' connection to the serial bus, according to user input.

19. The teachings of Tomoson are combinable with those of Prior Art and Holmdahl because they are analogous art. Specifically, the teachings of Prior Art and Tomoson are both directed toward devices with a means to switch between multiple units accessing a single serial connection to a computer. Therefore, it would have been obvious to one of ordinary skill in the art, at the time of the applicant's claimed invention, to store on the computer a driver program, similar to that of Tomoson, capable of controlling the switching means (i.e. the EMS) of the image processing device discussed above in response to a user's input. It should be clear that the type of device (other than being serial devices) attached to the EMS, and driven by the device driver, has no bearing on the fundamental operation of the driver or switching means. Given this and the configuration of the aforementioned image processing device, it would have also been obvious to one of ordinary skill in the art, at the time of the applicant's claimed invention, to:

- (3.a.) Switch the connection (via the EMS) over to the image capturing unit, when the user wants to use the image capturing unit.
- (3.b.) Switch the connection (via the EMS) over to the memory card reading unit, when the user wants to retrieve digital data from the memory card.

The motivation to introduce a device driver, such as that which is taught by Tomoson, would have been to, among other things, allow operating systems and other software applications to switch between devices according to user input. This is consistent with the typical usage of

device drivers. Combining the teachings of Tomoson, Holmdahl, and Prior Art, in the manner just described, yields a device in accordance with claim 3.

20. *The following is in regard to Claim 6.* As shown above, the teachings of Prior Art and Holmdahl, when combined in the manner discussed above, adequately address the limitations of claim 6. However, neither Prior Art nor Holmdahl expressly show or suggest:

(6a.) The computer further comprises a driver program for controlling the device.

(6.b.) When a user wants to first retrieve the digital image data from the image capturing unit and then store the digital image data in the memory card, the EMS switches:

(6.b.1) The connection first to the image capturing unit.

(6.b.2) Then over to the memory card reading unit so that the digital image data can be stored in the memory card.

21. Tomoson disclose a computer peripheral switching device for switching between various peripheral devices attached to a computer via a serial bus (Tomoson paragraphs [0007] and paragraph [0021] (sentence 3) and Figs. 1-4). The switching device of Tomoson allows the user to select the desired peripheral (Tomoson paragraph [0011] and [0022]). A device driver, resident on the host computer, conveys the user's requests to the switching circuitry (Tomoson paragraph [0026], sentence 1 and lines 13-16), thereby delegating the peripherals' connection to the serial bus, according to user input.

22. The teachings of Tomoson are combinable with those of Prior Art and Holmdahl because they are analogous art. Specifically, the teachings of Prior Art and Tomoson are both directed toward devices with a means to switch between multiple units accessing a single serial

Art Unit: 2623

connection to a computer. Therefore, it would have been obvious to one of ordinary skill in the art, at the time of the applicant's claimed invention, to store on the computer a driver program, similar to that of Tomoson, capable of controlling the switching means (i.e. the EMS) of the image processing device discussed above in response to a user's input. The motivation to introduce a device driver, such as that which is taught by Tomoson, would have been to, among other things, allow operating systems and other software applications to switch between devices according to user input. This is consistent with the typical usage of device drivers.

23. It can be argued that (6.b.) follows directly from claim 5 because the serial bus can carry data from one device at a time. Therefore, if the user wants to transfer data from the scanner to the card, the devices must be switched according to the sequence shown in (6.b.1)-(6.b.2).

Therefore, combining the teachings of Tomoson, Holmdahl, and Prior Art, in the manner just described, yields a device in accordance with claim 6.

24. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over the Prior Art, in view of Holmdahl, in further view of Bando et al. (U.S. Patent 4,292,613).

25. *The following is in regard to Claim 11.* As shown above, the teachings of Prior Art and Holmdahl, when combined in the manner discussed above, adequately address the limitations of claim 1. However, neither Prior Art nor Holmdahl expressly show or suggest that when no power is supplied to the electromagnetic mechanical switch, the electromagnetic mechanical switch will switch its connection to the image capturing unit; and when power is supplied to the electromagnetic mechanical switch, the electromagnetic mechanical switch will switch its connection to the memory card reading unit

26. The operation of electromagnetic relays is well-known. Certain electromagnetic relays switch between their various contacts when power is applied and when it is not. Bando et al., for example, disclose an electromagnet relay where certain contacts are open during energization of the contacts (Bando et al. column 3, lines 36-40), while others are closed (Bando et al. column 3, lines 40-43). Also, certain contacts Bando et al.'s relay are closed when power is removed (Bando et al. column 3, lines 26-30).

27. The teachings of Bando et al. are combinable with those of Prior Art and Holmdahl because they are analogous art. Specifically, the relay of Bando et al. represents a switching means, and more specifically an EMS, that can be used in either of the devices disclosed by Prior Art or Holmdahl. Therefore, it would have been obvious to one of ordinary skill in the art, at the time of the applicant's claimed invention, to use the relay of Bando et al. or the like in as the EMS in the device obtained by combining Prior Art and Holmdahl. Such a modification would have been in accordance with the suggestions of Holmdahl (Holmdahl column 7, lines 57-58).

28. As just shown, the relay of Bando et al. is capable of switching the connections between certain pairs of contacts when power is applied and switching the connections between other pairs of contacts when the power is not applied. Assuming such a relay is used to connect the image capturing device and memory card reader to the serial bus, the choice to switch the connection to the image capturing unit when power is not applied and switch the connection to the memory card reader when power is applied seems arbitrary, since configuring the device to switch under opposite criteria (i.e. switch the connection to the image capturing unit when power is applied and switch the connection to the memory card reader when power is not applied) does not seem to change the operation of the device substantially or introduce any benefit. Therefore, it would have been obvious to one of ordinary skill in the art, at the time of

the applicant's claimed invention, to perform switching according to the former configuration.

This would result in a device that conforms sufficiently to claim 11.

29. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over the Prior Art, in view of Holmdahl, in further view of the Universal Serial Bus Specification Revision 1.1 (September 1998). For the sake of brevity, the Universal Serial Bus Specification Revision 1.1 will be referred to simply as USB 1.1.

30. *The following is in regard to Claim 8.* As shown above, the teachings of Prior Art and Holmdahl, when combined in the manner discussed above, adequately address the limitations of claim 1. While Holmdahl show the usage of a single relay (Holmdahl Fig. 3A and 3D) for switching the power lines emanating from the various attached USB devices, neither Prior Art nor Holmdahl expressly show or suggest that the serial bus cable comprises two power lines and two data lines, while the electromagnetic mechanical switch comprises two relays: one relay for switching between the pair of corresponding data lines emanating from each of the attached units (i.e. the image capture unit and the memory card reading unit), and the other relay for switching between the corresponding set of power lines emanating from each of the attached units.

31. According to USB 1.1 (USB 1.1 page 17, Fig. 4-2), the serial bus cable comprises two power lines (VBUS and GND) and two data lines (D+ and D-). The voltages associated with the power lines and the voltages associated with the data lines are different (i.e. 5V VBUS and $0.3V \leq D+, D- \leq 3.6V$ – USB 1.1 page 142, Table 7-5). Moreover, the data signals undergo a rather large voltage swing ($0.3V \leq D+, D- \leq 3.6V$), whereas the power lines have a static voltage. Given these signal characteristics, it would have been obvious to one of ordinary skill in the art,

at the time of the applicant's claimed invention, that, when using relays as the EMS to switch the various attached devices, the power lines should and data lines should be switched with separate relays. That is, it would have been obvious to one of ordinary skill in the art, at the time of the applicant's claimed invention, to extend the operation of the device obtained by combining Prior Art One and Holmdahl by including an additional relay (in addition to the relay 70 for switching the power lines as shown in Holmdahl Fig. 3A) to switch between the data lines emanating from the various attached devices. One is motivated to configure the switching means in this manner to support the USB standard and, by using two relays, to avoid any interference or crosstalk that may occur from using a single relay. The image processing device, obtained by combining the teachings of Prior Art and Holmdahl, when configured in this manner conforms to that which is set forth in claim 8.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Siangchin whose telephone number is (703)305-7569. The examiner can normally be reached on 9:00am - 5:30pm, Monday - Friday.

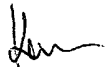
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amelia Au can be reached on (703)308-6604. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Application/Control Number: 09/682,404
Art Unit: 2623

Page 15

Kevin Siangchin



Examiner
Art Unit 2623

ks - 08/09/04



AMELIA M. AU
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600